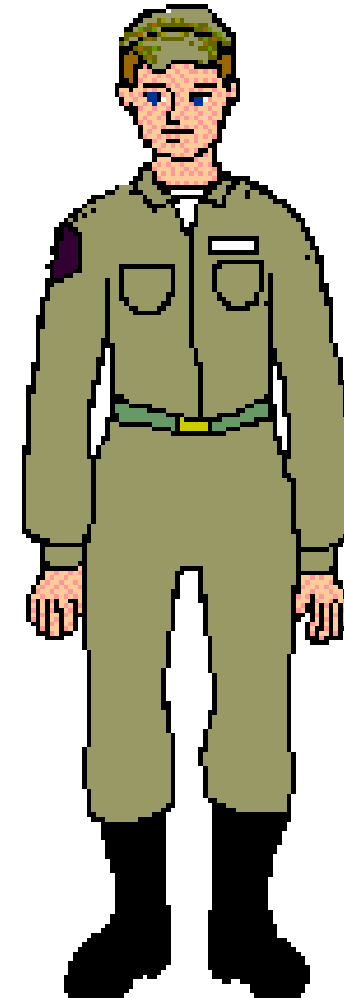




## Armed Forces College of Medicine AFCM





# **The Hip Joint**

## **By**

# **Prof Azza Kamal**



# Intended Learning Outcomes

**By the end of this lecture, each student should be able to:**

- 1. Mention** the type of the hip joint.
- 2. Describe** the capsule & ligaments of the hip joint.
- 3. Describe** the important relations of the hip joint & the related applied anatomy.
- 4. Explain** the factors stabilizing the hip joint.
- 5. Mention** the nerves & vessels supplying the hip joint.
- 6. List** movements of hip joint & the muscle groups producing them.



# KEY POINTS OF LECTURE

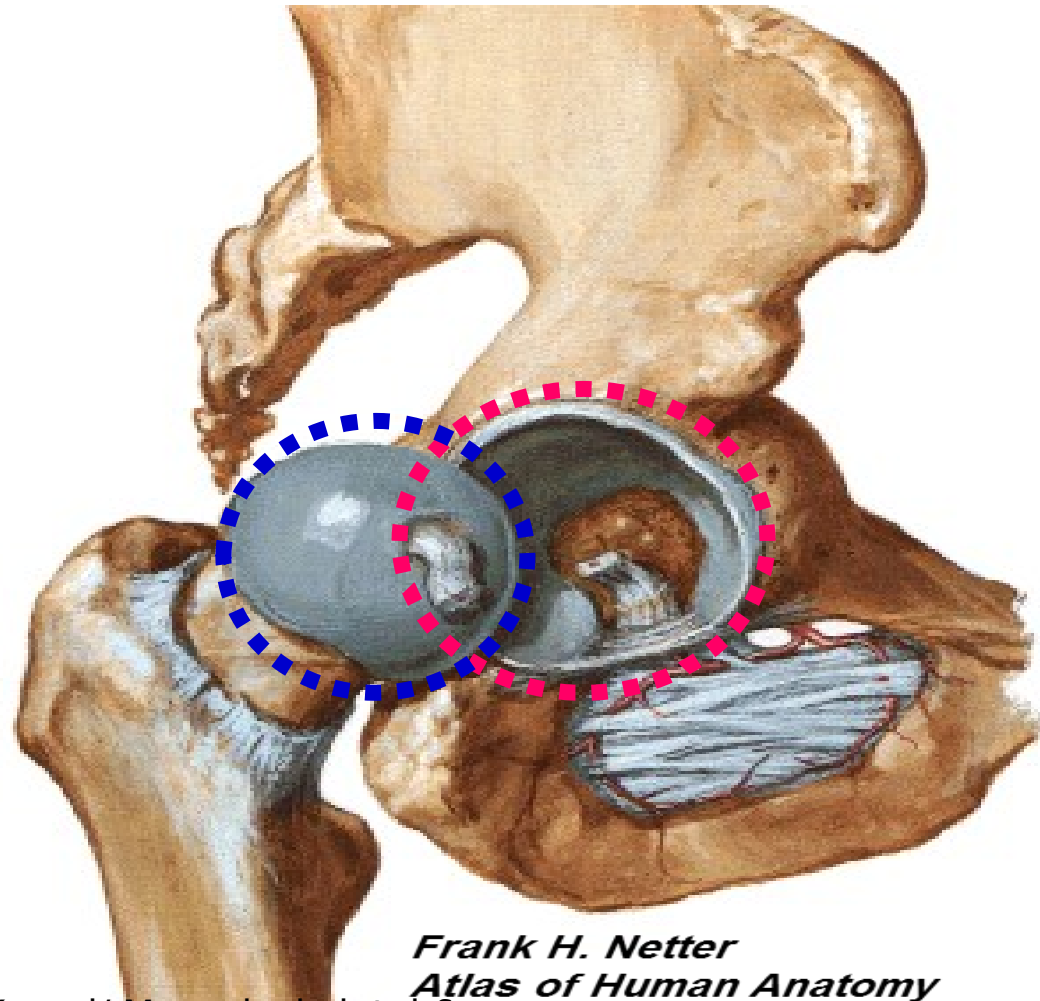
## HIP JOINT:

- 1) Type
- 2) Capsule & Ligaments
- 3) Important relations
- 4) Stabilizing factors
- 5) Nerves & vessels
- 6) Movements



# The Hip Joint

- **Type** : synovial ball & socket
- **Articular surfaces**:
  - (1) acetabulum of hip bone
  - (2) head of femur

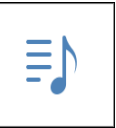


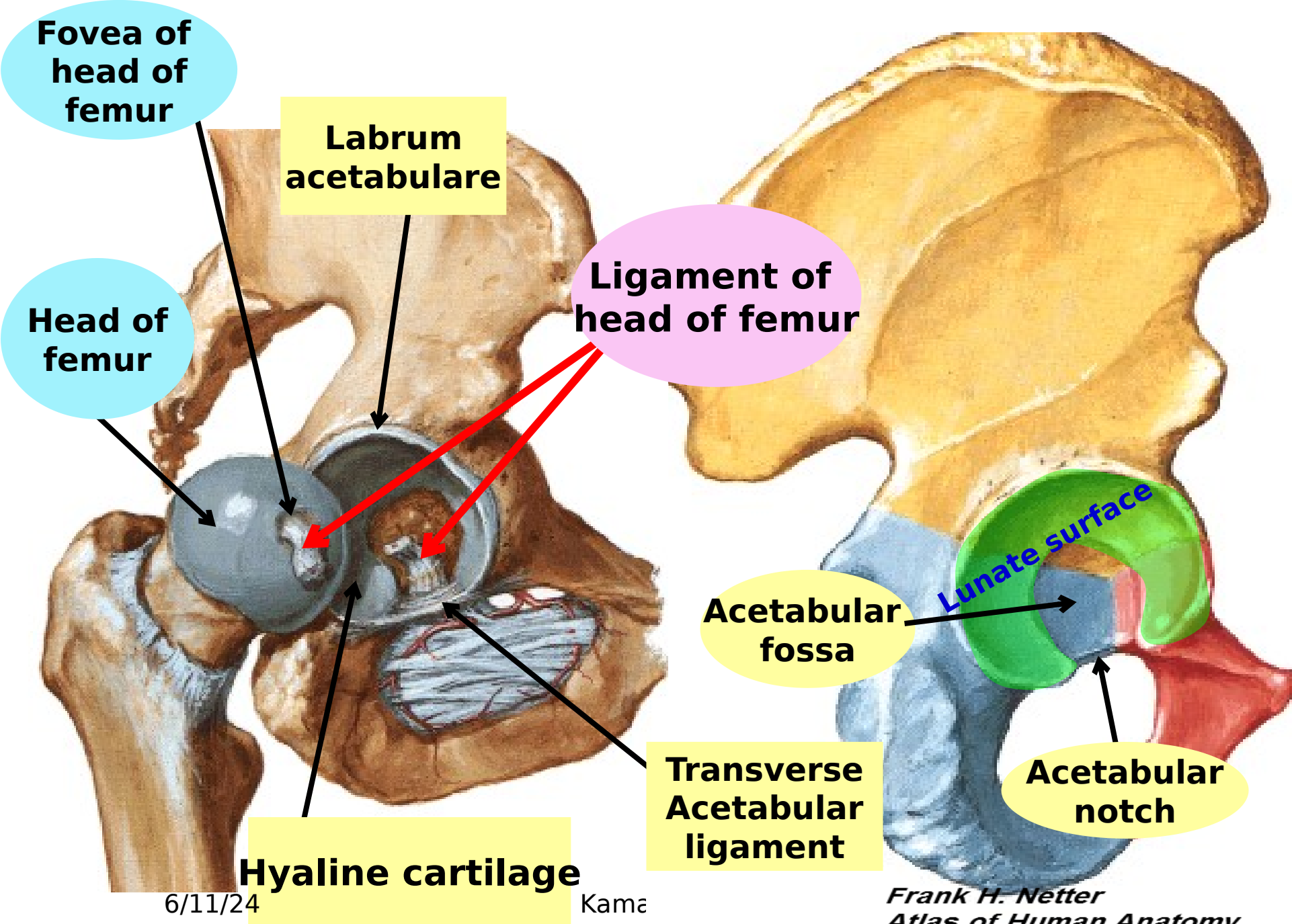
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Atlas of Human Anatomy  
6th edition*



**The hip joint is a synovial joint of which of the following shapes?**

- A) Plane**
- B) Ellipsoid**
- C) Saddle**
- D) Ball and socket**
- E) Pivot**





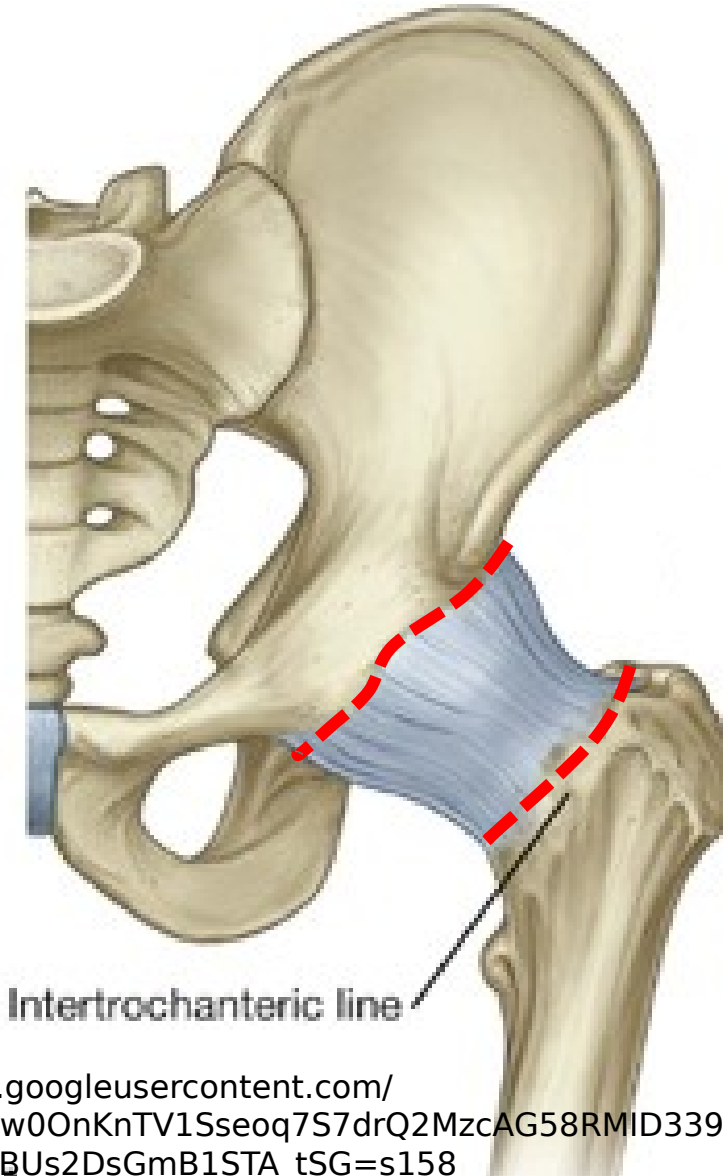
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Kama  
Integumentary System

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# Fibrous capsule of hip joint

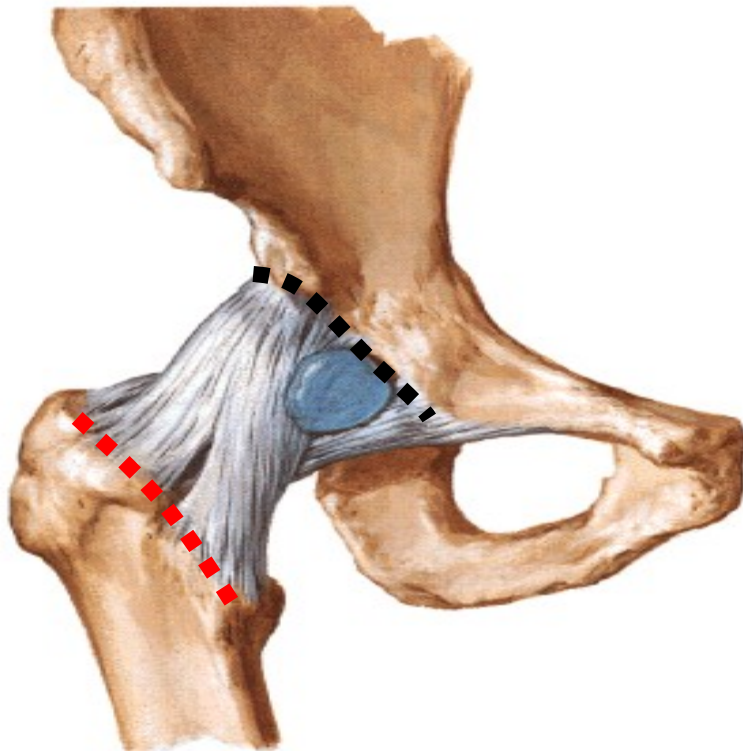
- **Attachment:**
- **To margins of acetabulum outside labrum acetabulare & transverse acetabular ligament**
- **To neck of femur** □  
anteriorly to  
intertrochanteric  
line & posteriorly  
one cm above  
intertrochanteric



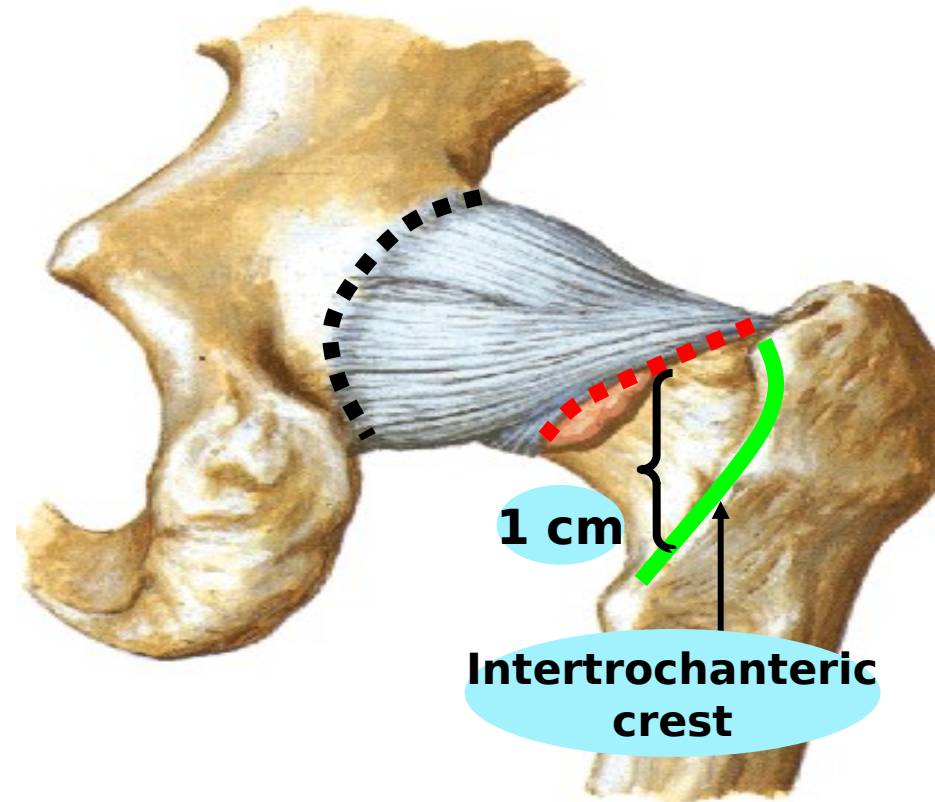
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**Hip Joint**  
Anterior View



**Hip Joint**  
Posterior View



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*Atlas of Human Anatomy*  
*6<sup>th</sup> edition*

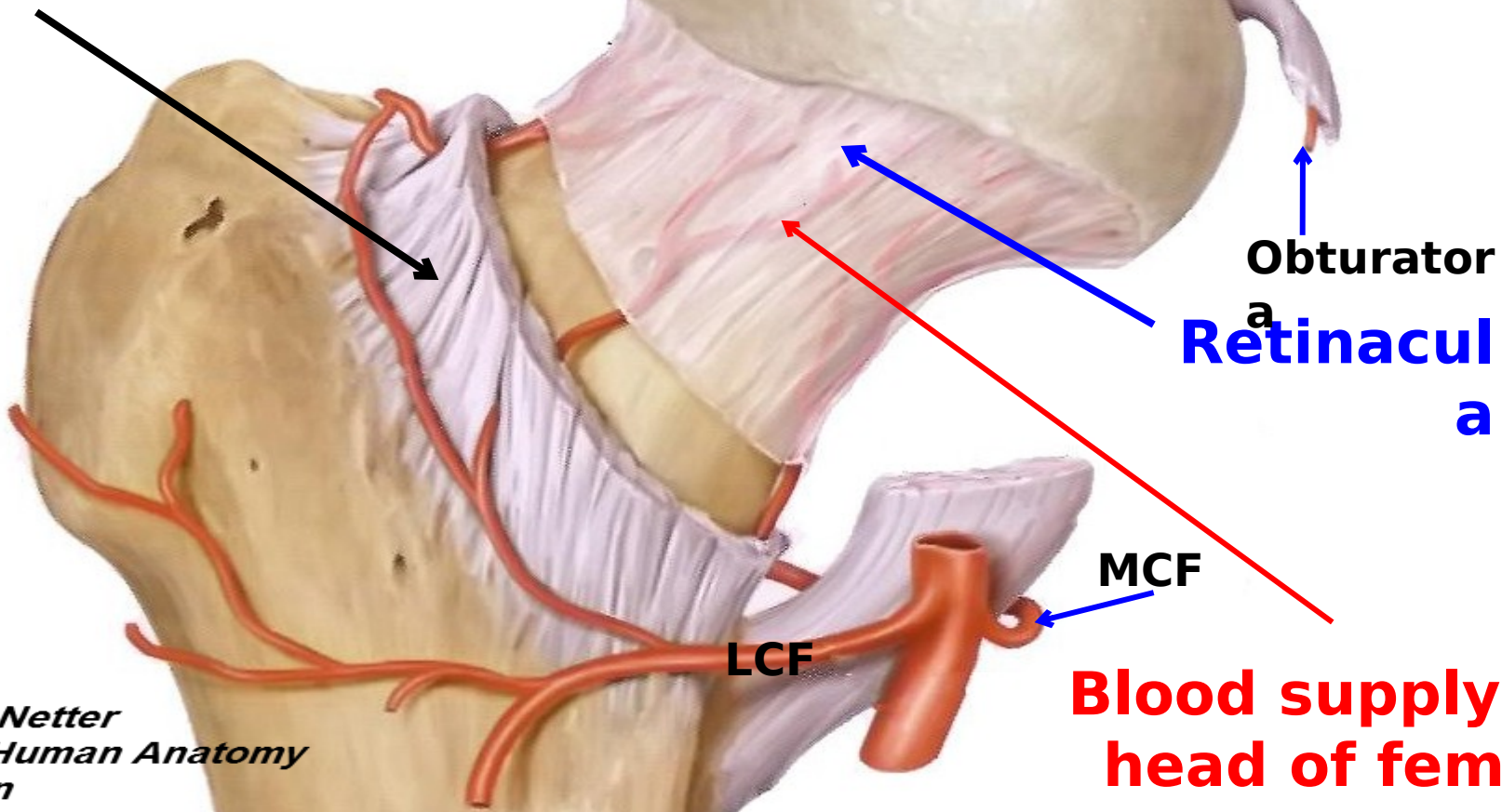
- **Retinacula of neck of femur:**
- **Some fibers of the capsule are reflected along the neck of femur as longitudinal bands □  
retinacula**
- **Function of retinacula:**
- **In fracture neck of femur, retinacula helps to keep the broken fragments of bone together.**
- **Blood vessels pass along these retinacula to supply the head of femur**







**Capsule**



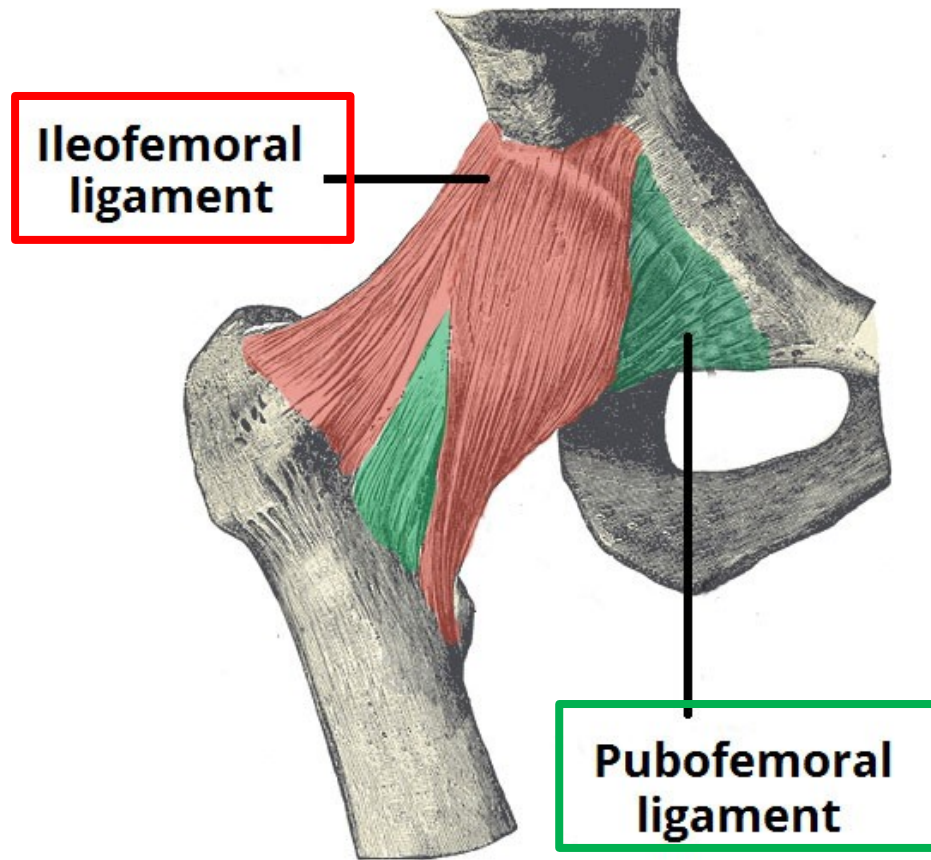
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**In case of fracture neck of femur □  
interruption to retinacular blood supply □  
avascular necrosis of femoral head**

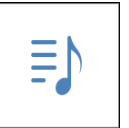
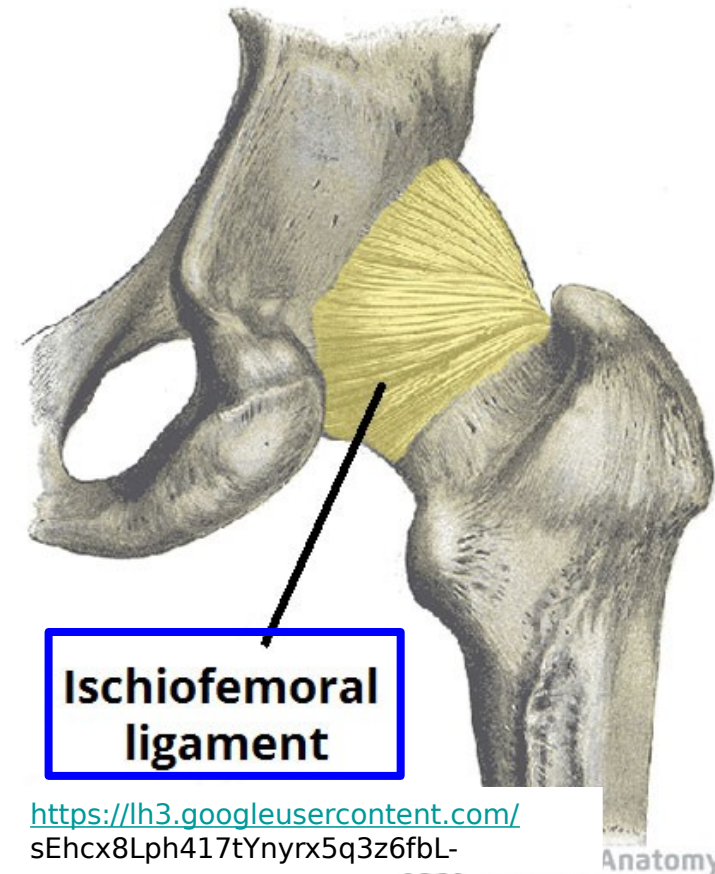
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head of femur to supply the head as well.

## Anterior



## Posterior



Capsule of hip joint is strengthened from outside by 3 ligaments:

- 1) **Iliofermal ligament** □ adherent to front of capsule
- 2) **Pubofemoral** □ adherent to inferomedial part of capsule
- 3) **Ischiofemoral** □ adherent to back of capsule

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# 1) Iliofemoral ligament:

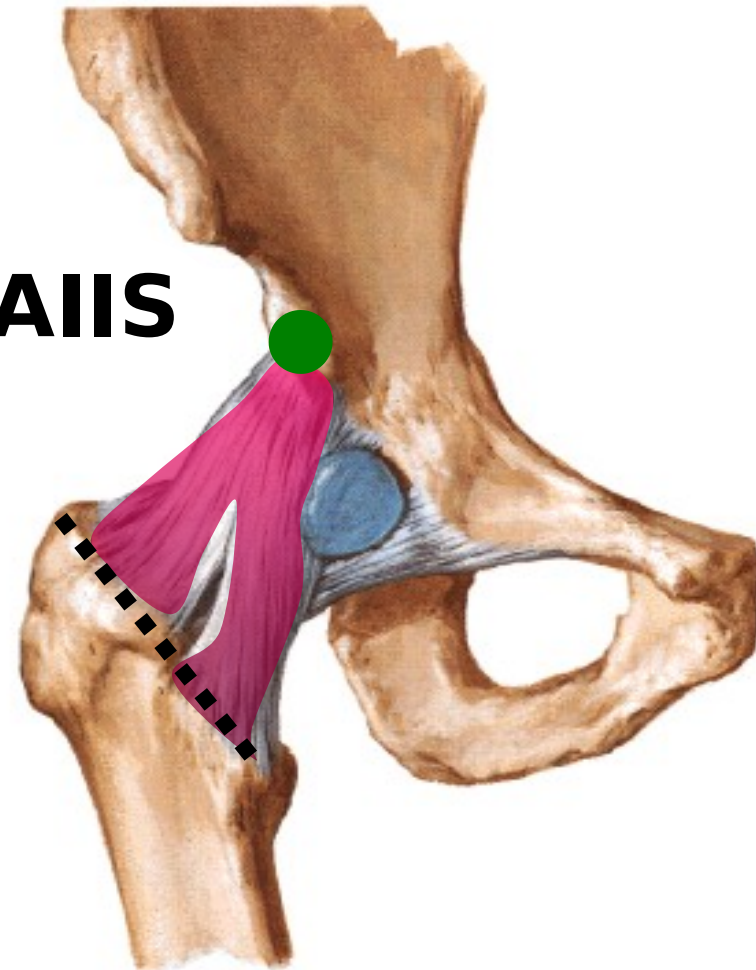
- Y shaped
- Stem of Y  $\square$  AIIS
- 2 bands  $\square$

intertrochanteric line of femur

- **Function**  $\square$   
**supports hip joint anteriorly & prevents**

**hyperextension of the hip joint**

Hip Joint  
Anterior View

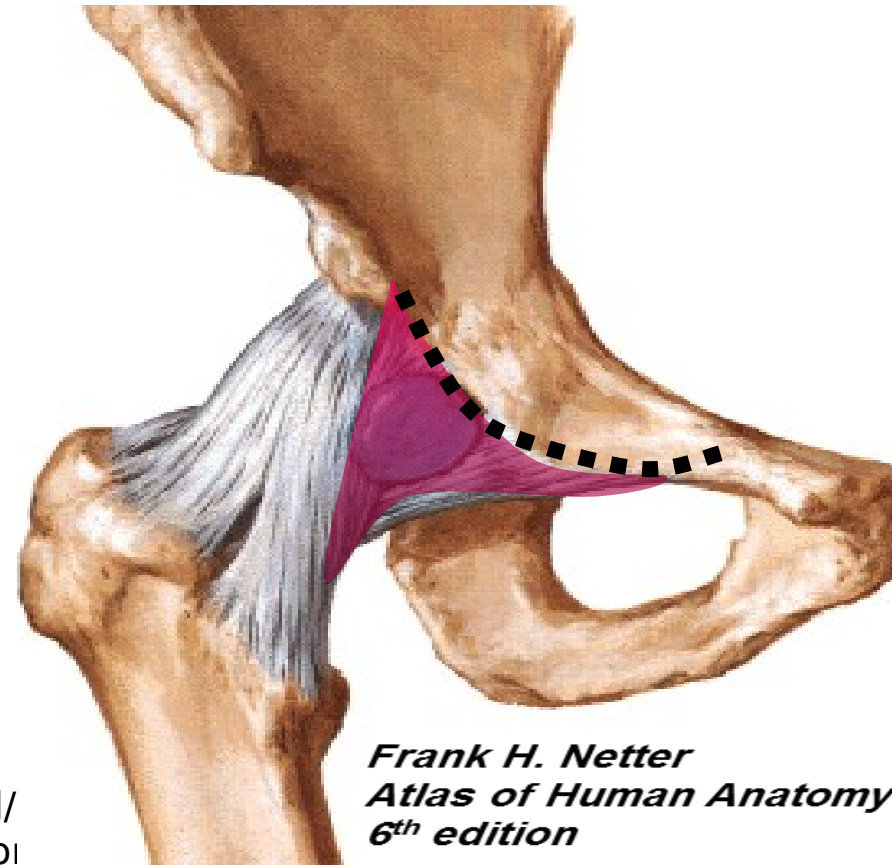
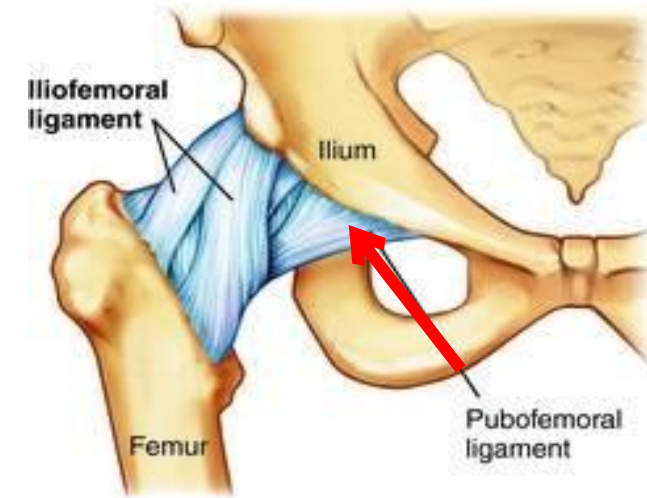


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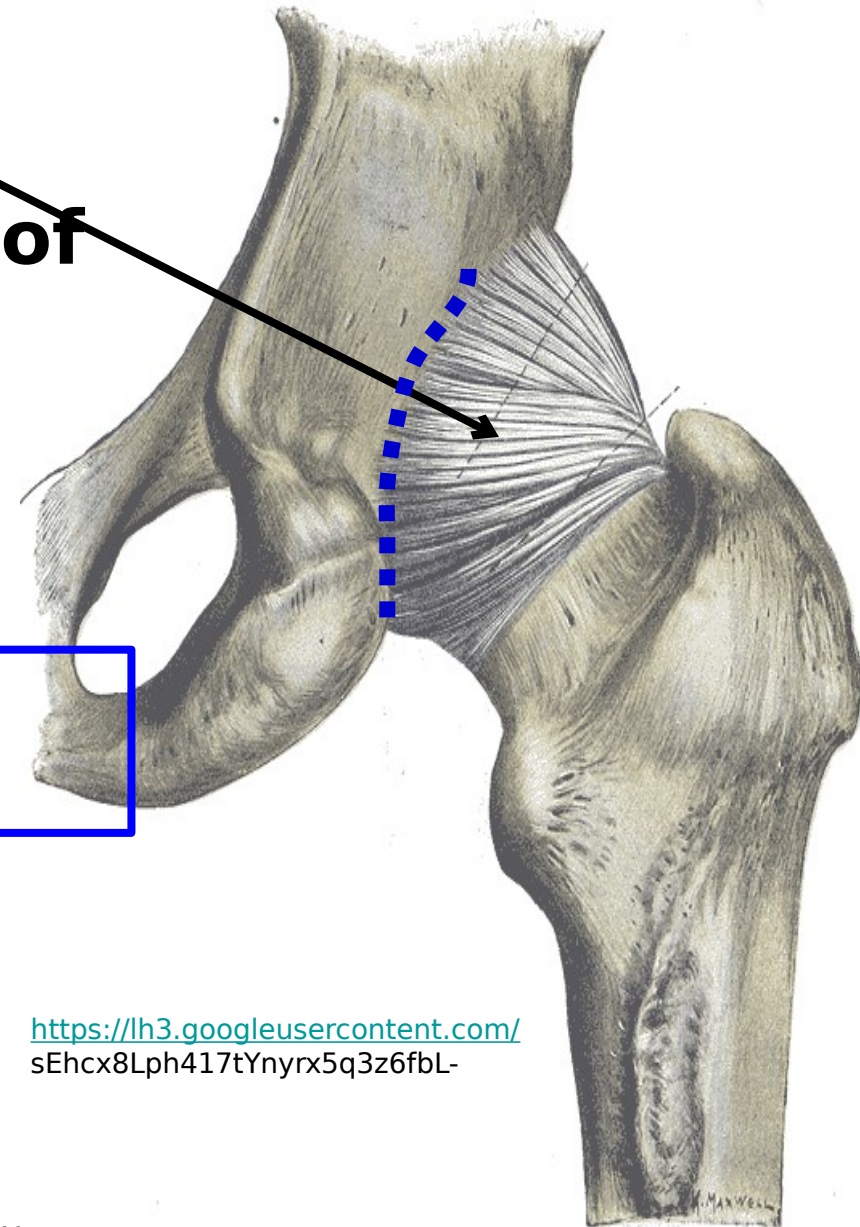
## 2) Pubofemoral ligament:

- Attached above to:
- Iliopectineal eminence & superior pubic ramus
- Below ☐ blends with iliofemoral lig
- Function :  
supports hip joint  
inferomedially &  
limits abduction



### 3) Ischiofemoral ligament:

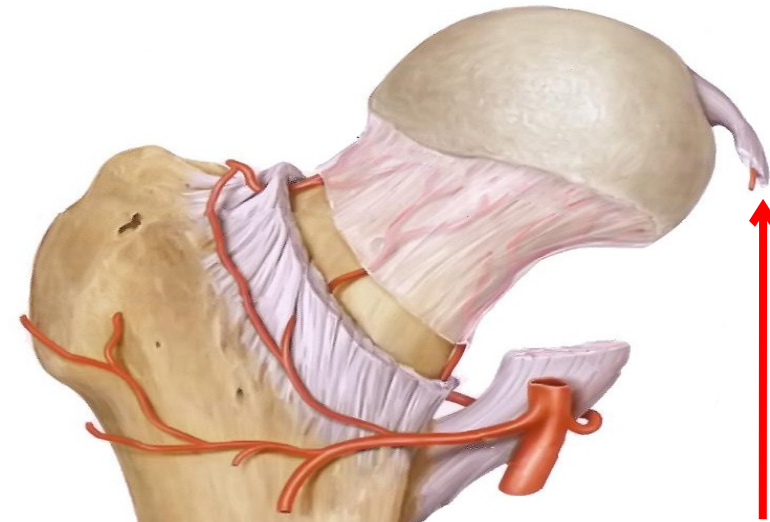
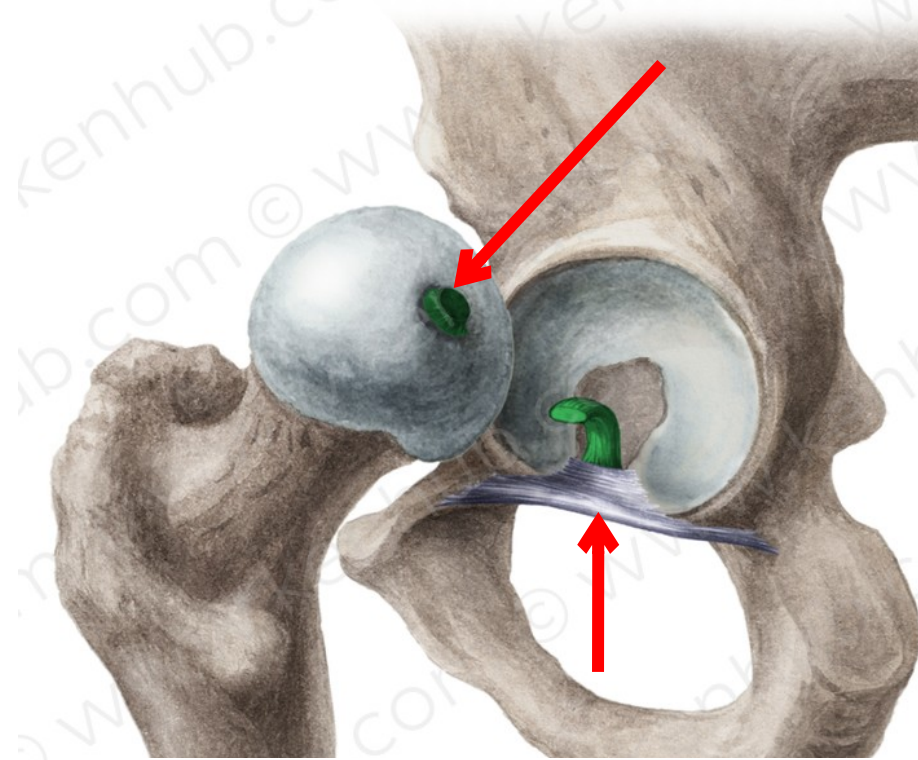
- Lies on posterior part of capsule
- **Attached above to ischium just below acetabulum**
- **Below** □ blends with iliofemoral ligament
- **Function:**
- **Supports the hip joint posteriorly and limits medial rotation of hip**



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- **Ligament of head of femur:**
- **Base attached to acetabular notch & transverse acetabular ligament**
- **Apex attached to fovea of head of femur**
- **Function: transmits a branch from obturator artery**

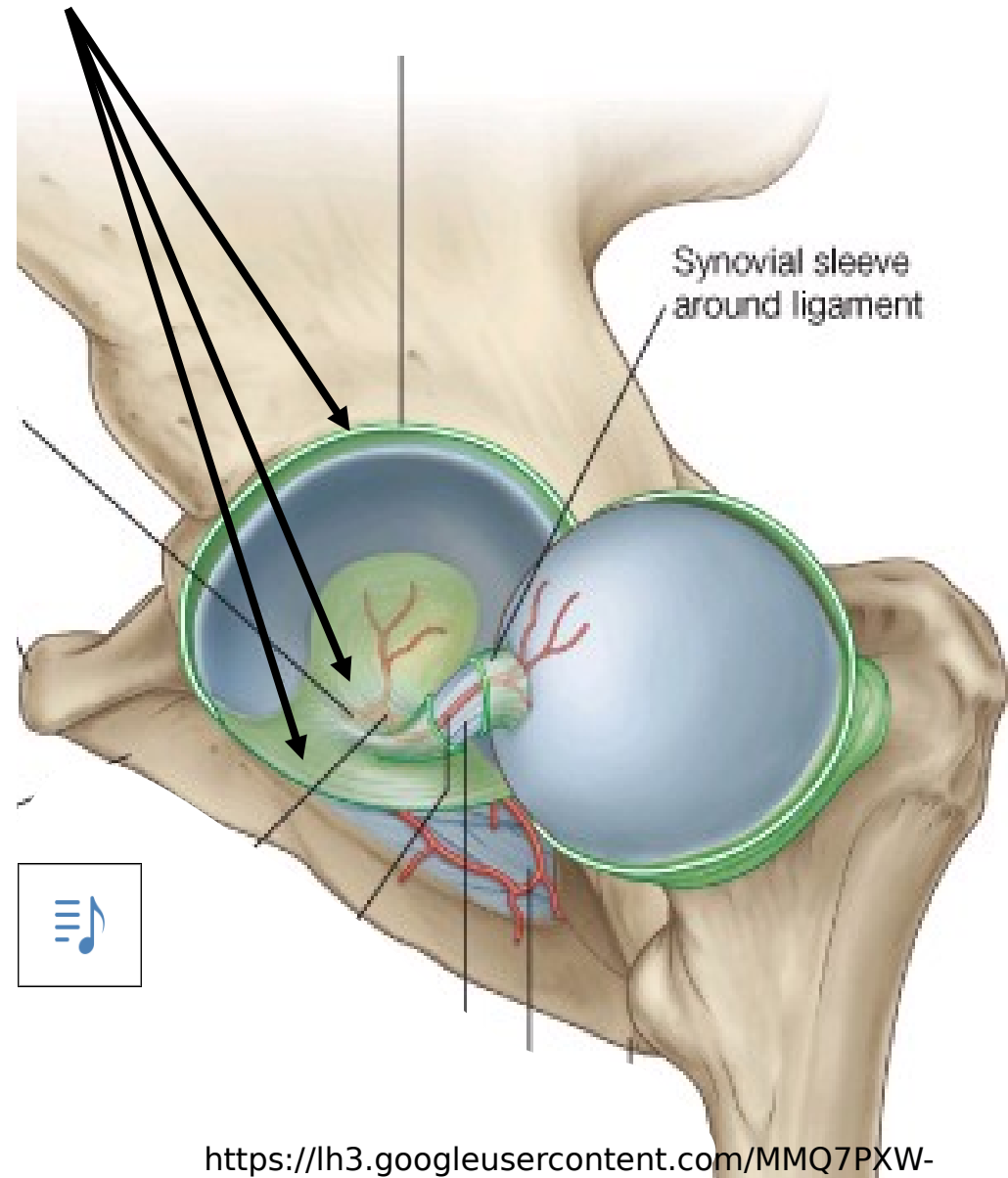


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- **Synovial membrane:**
- **Lines** inner surface of capsule
- **Covers** all intracapsular structures, except the articulating surfaces



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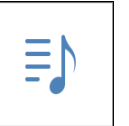
# Important relations of hip joint

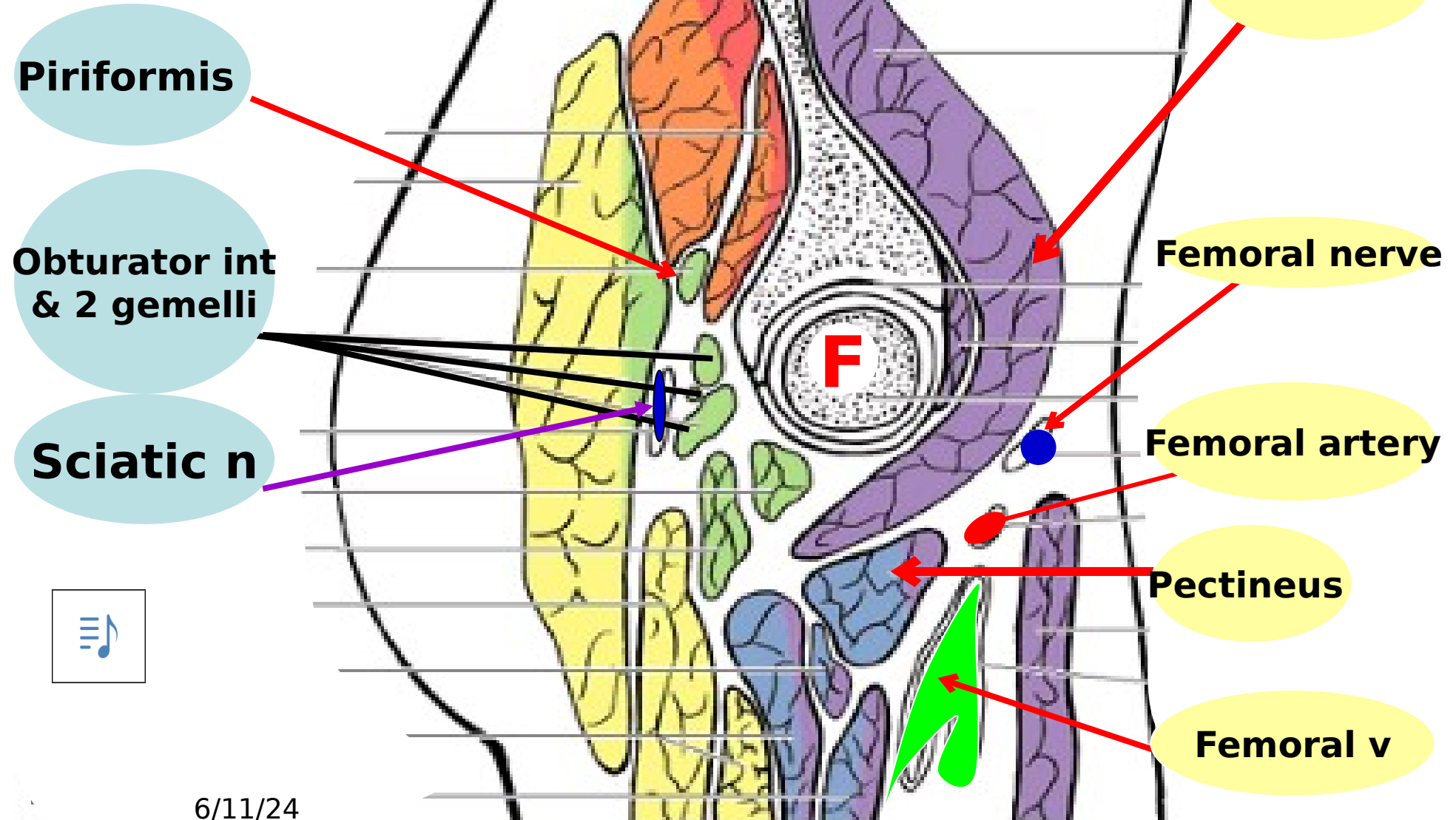
- **Anteriorly :**

- 1) [redacted] g it from **femoral vein**
- 2) Iliopsoas separating it from **femoral artery & nerve**

- **Posteriorly:**

- **Piriformis, obturator internus & 2 gemelli** separating it from **sciatic nerve**





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# Stability of hip joint

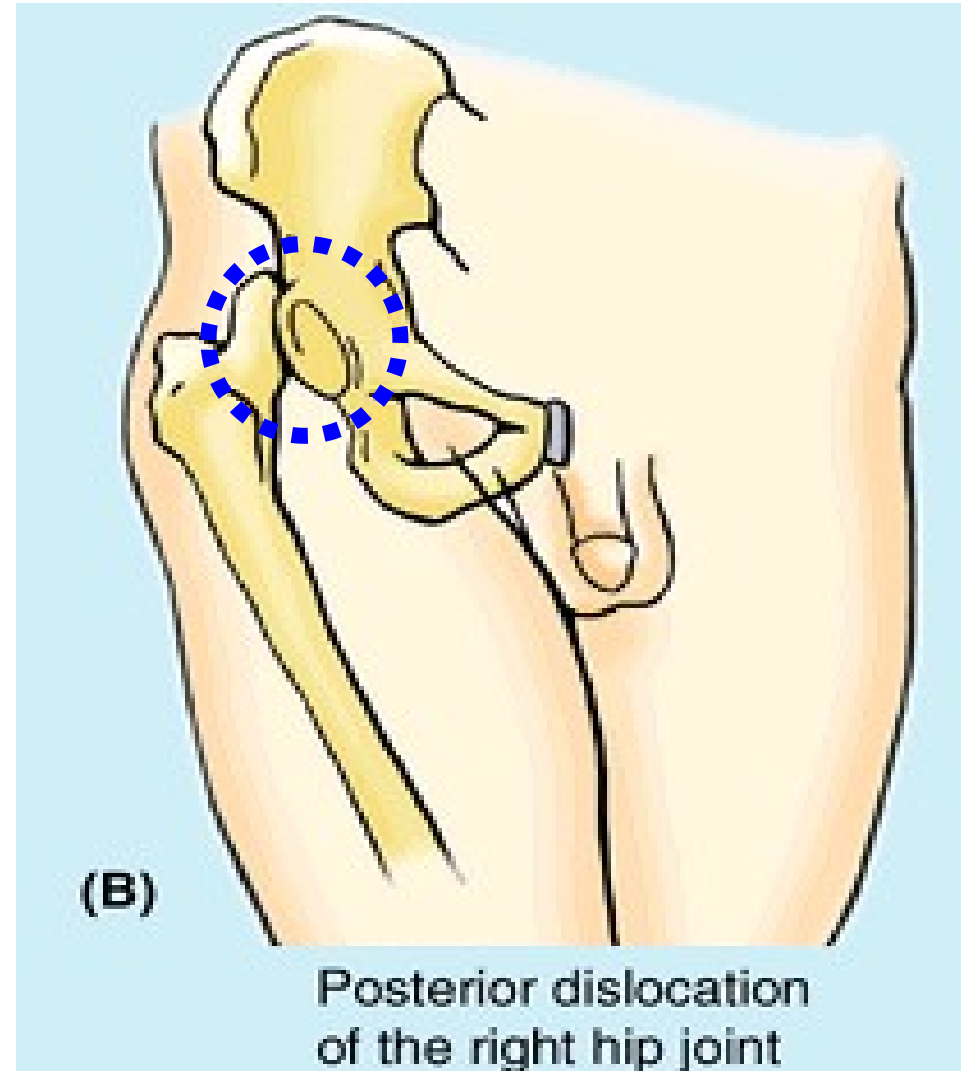
- **It is a stable joint due to :**
- **1) Bony factor:**
- **Acetabulum is deep & well cupped to accommodate the femoral head**
- **Labrum acetabulare deepens the acetabulum**
- **Long & oblique femoral neck allows the lower limb to move freely away from the pelvis**
- **2) Strong ligaments**
- **3) Large & strong muscles around hip joint**



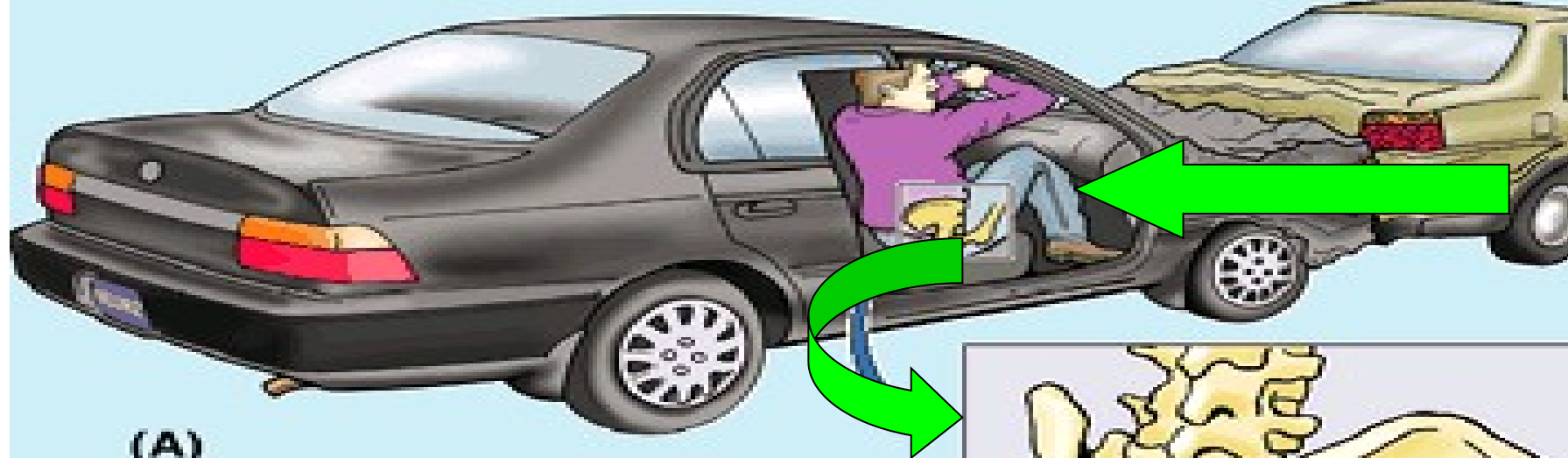


# Clinical note

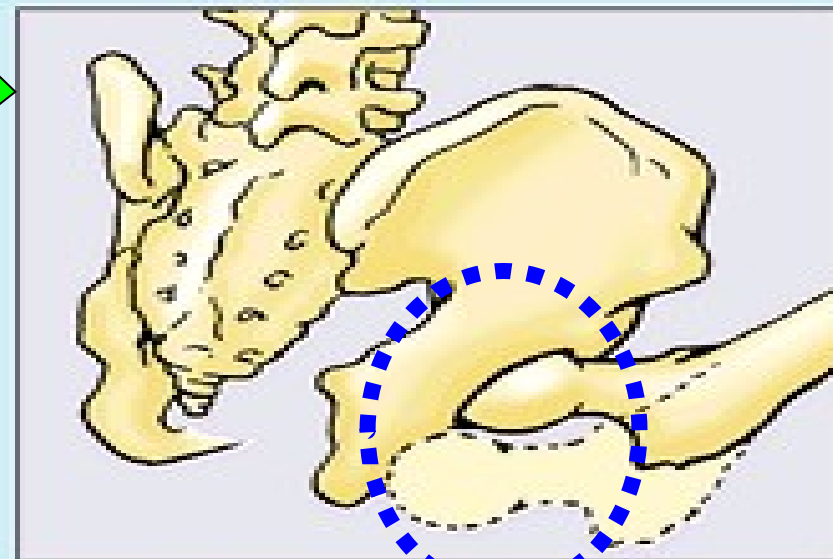
- Hip joint could be dislocated as in car accidents, where it is usually a **posterior dislocation**  
□ sciatic nerve injury since the nerve lies **posterior to the joint**



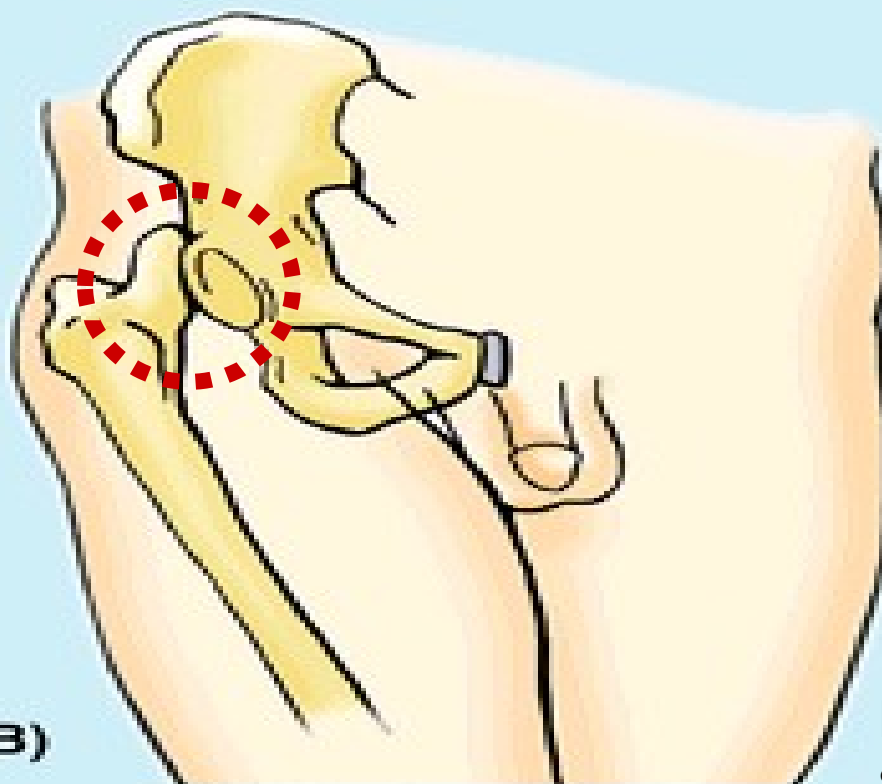
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(A)



Head of femur is driven posteriorly, out of acetabulum



(B)

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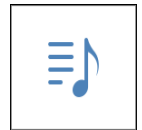
Posterior dislocation  
of the right hip joint

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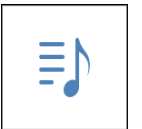
# Nerve supply

- 1. Femoral nerve ( nerve to rectus femoris)**
- 2. Obturator nerve ( anterior division)**
- 3. Accessory obturator nerve ( if present )**
- 4. Nerve to quadratus femoris**
- 5. Superior gluteal nerve**



# Arterial supply

- 1. Obturator artery**
- 2. Medial circumflex femoral artery (acetabular br)**
- 3. Superior & inferior gluteal arteries**
- 4. Lateral & medial circumflex femoral arteries (ascending brs)**



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**Obturator a**

**Medial circumflex femoral**

**Lateral Circumflex femoral**

**Profunda femoris a**

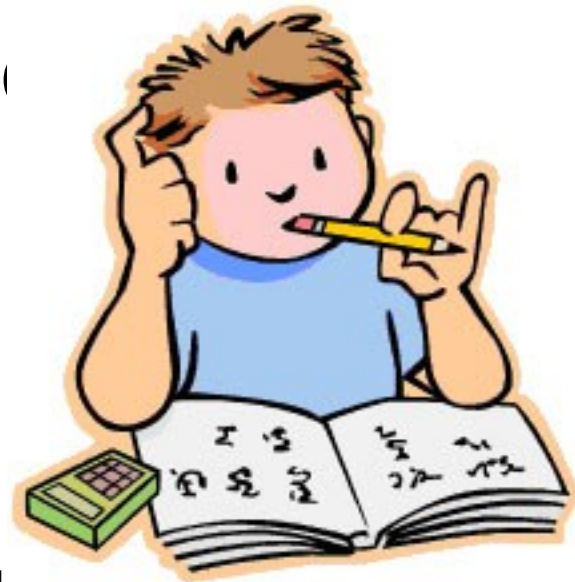


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**The following artery is considered the chief ( main) blood supply to the head of femur:**



- A) Medial circumflex femoral**
- B) Lateral circumflex femoral**
- C) Obturator**
- D) Superior glutea**
- E) Inferior gluteal**



# Movements of hip joint

Movement	Main muscles
1) flexion	<b>Muscles which lie anterior to hip joint</b> Biceps femoris (Anterior) [most important]
2) extension	<b>Muscle at back of hip+ Muscles at back of thigh</b> Gluteus muscles
3) abduction	<b>Muscles on lateral aspect of hip</b> Gluteus medius & minimus
4) adduction	<b>Muscles on medial aspect of thigh</b> Adductors longus, brevis & magnus + gracilis & pectineus
5) Medial rotation	<b>Anterior fibers of glutei medius &amp; minimus + adductors</b>
6) Lateral rotation	<b>6 lat rotators + gluteus maximus</b>



**The most important muscle group in hip flexion lie:**

- A) Posterior to the hip**
- B) Anterior to the hip**
- C) On medial side of thigh**
- D) Lateral to the hip**
- E) In the gluteal region**







***Suggested Textbook:***  
*Clinical Anatomy by Systems*  
*Richard S. Snell*  
*Pages 406-409*

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Professor Azza Kamal/ Musculoskeletal &  
Integumentary System